

REMARKS

Claim 1 was rejected under 35 U.S.C.102 (b) as being anticipated by Day et al. The Day et al Patent of record discloses a cyclone housing 10 having a conical portion 12 with a cylindrical portion 14 adjoining the open upper end of the conical portion 12. A cover 20 is disposed over the open top end of the cylindrical portion 14 of the housing 10. A liner body 26 has an integral upper cylindrical portion 28 that is positioned in the cylindrical portion 14 of the housing 10 and is shown in Figure 1 and indicated at column 4, lines 6+ as being a unitary structure which is open at the top. A cover liner 24 is provided on the downwardly facing surface of the cover 20 and it has an axially depending portion which is spaced concentrically inwardly from the inner surface of the cylindrical portion 14 of the housing 10 and that depending portion defines the vortex finder of the cyclone.

In making this rejection, the Examiner directed the Applicant's attention to column 4, lines 6+ of the Day et al patent of record and stated that the Day et al reference teaches "... at least a pair of head section abrasion resistant liners 24 and 26 arranged in an end-to-end relationship with each other so as to line the cylindrical interior surface of the head section of the inlet housing ...". In the column 4, lines 6+, referenced by the Examiner, it is clearly set forth that the liner body 26 lines the interior surface of the cyclone housing 10 and no showing or suggestion is made that the liner 24 is in that position or accomplishes that function. Further, the Day et al reference of record clearly defines the liner 24 as a cover liner and the drawings show the cover liner 24 as lining the lower surface of the cover 20 and in fact it is not touching the inlet housing 10 at all. In that the vortex finder portion of the cover liner 24, is spaced concentrically inwardly from the inner surface of the cylindrical portion 14 of the housing 10, it is respectfully submitted that it is not in physical contact therewith and lacking such contact it cannot be in contiguous engagement with that surface as specifically claimed by the Applicant.

Claim 1 has been amended to remove some of the language which may have been confusing and is now believed to more clearly distinguish over the art of record by

setting forth among other things, that said at least a pair of abrasion resistant liners are mounted in contiguous engagement with the inwardly facing cylindrical surface of said inlet housing and are arranged in an end-to-end relationship with each other so as to line the cylindrical interior surface of said inlet housing.

The Day et al patent of record shows and indicates that the liner body 26 is a unitary structure which is the only liner that is in contiguous engagement with the inwardly facing surface of the cylindrical portion 14 of the housing 10. The Applicant's claim 1 as amended is believed to distinguish over the Day et al reference of record by virtue of the specifically claimed limitation of at least a pair of liners mounted in contiguous engagement with the inwardly facing surface of said inlet housing. And further, since the cover liner 24 of the Day et al reference is not in contiguous engagement with the inwardly facing surface of the cylindrical portion 14 of the housing 10, it is believed that the Day reference of record is not anticipatory of the Applicant's specifically claimed structure.

Claim 2 was rejected under 35U.S.C. 103(a) as being unpatentable over Day et al in view of Malina. In making this rejection, the Examiner stated that "Day et al teaches all of the features of the claimed invention except for a feed duct liner of abrasion resistant material in the feed duct of said inlet housing." And that "Malina teaches a liner system for a cyclone that can include a feed duct liner of abrasion resistant material in the feed duct. See column 4, lines 41+."

In view of the current amendment of claim 1 and the Applicant's remarks as set forth above relating to the rejection under 35U.S.C 102 (b) of claim 1 over Day et al, it is respectfully believed that claim 1 now clearly distinguishes over the Day et al reference of record. As the Examiner stated, Malina does suggest that a feed duct liner can be used in the feed duct of the cyclone. However since claim 2 is dependent from amended Claim 1, it is construed to include all the limitations of Claim 1. Therefore Claim 2 is believed to distinguish over the Art of Record for the same reasons as claim 1.

In the "DISPOSITION OF CLAIMS" paragraph on the Office Action Summary page of the present Office action, the Examiner indicated at item 6) that claims 1-4,7 and 8 were rejected, and at item 7) that claims 5,6 and 9 were objected to. But, in the DETAILED ACTION portion of the Office Action, the Examiner rejected claims 3-8 under 35 U.S.C. 103(a). It is noted that no mention is made in the DETAILED ACTION as to the status of claims 5, 6 and 9 and for that reason those claims will be considered as being objected to.

Claims 3-8 (claims 4,7 and 8) were rejected under 35 U.S.C. 103 (a) as being unpatentable over Day et al in view of Malina and further in view of Hakola.

In addition to indicating the use of a feed duct liner, the Malina Patent of record discloses an abrasion resistant liner of in the form of a bladder 44 of unitary configuration that extends the full length of the cyclone housing 10 with an integral one-piece upper part that is disposed in the inlet portion 14 of the housing. Although Malina does suggest the use of a liner in the feed duct, that disclosure fails to show or suggest the use of at least a pair of abrasion resistant liners in said inlet housing. Further, the Malina bladder is provided with a tubular insert 46 at the high wear portion of its apex but fails suggest that the bladder could be modified by adding such an insert to that portion of it which is located within the inlet housing.

The Hakola Patent of record is directed to a quick release apex apparatus for a cyclone. The Examiner's attention is directed to column 10, lines 26+ wherein the use of a liner is discussed as being bonded to the interior of the apex housing and its use is limited to "...only the smallest diameter portions of the apex housing 95..." In Figure 17 along with the discussion thereof at column 9, lines 14+, Hakola discloses a urethane apex housing 86 having an outer urethane skin 77 with a metal liner 87 that is chemically bonded to the inner wall of the apex housing and extends the full length thereof. The Hakola disclosure lacks the use of any liner at all in its inlet housing. and therefore, it is respectfully submitted that Hakola cannot teach the use a insert in a liner which it does not have.

In making this rejection, the Examiner stated that " Day et al teaches a liner system that comprises a rigid substrate, 10; and an abrasion resistant liner, 26, bonded

to the inwardly facing surface of each of said rigid substrates. " Claim 3 is currently amended to more clearly point out the terms "substrate and cyclone housing" as used in the Applicant's specification and claims are two separate and distinct elements.

Claim 3 now sets forth that the abrasion resistant material and the substrate form the liners into two-part structures with the substrates thereof being the parts which are in contiguous engagement with the inwardly facing surface of said inlet housing. Since the art of record as discussed above does not set forth or suggest such a structure, it is believed that Claim 3 as currently amended distinguishes over the art of record on its own merits and further in view of its dependency from currently amended.claim 1

Claim 4 broadly claims the use of attachment means for demountably holding said abrasion resistant liners in contiguous engagement with cylindrical interior surface of said inlet housing. Claim 4 depends from currently amended claims 1 and 3 and is therefore construed to include all the limitations of those claims. Claim 4 is therefore believe to distinguish over the art of record for the same reasons that claims 1 and 3 distinguish over the art of record.

Claim 5, which is believed to be objected to, sets forth that each of said attachment means comprises a threaded fastener on the inwardly facing surface of one of said rigid substrates and a bolt extending from the outer surface of said inlet housing into threaded engagement with said threaded fastener. Since the Art of record does not disclose such a structure, it is believed that claim 5 distinguishes over the art of record.

Claim 6, which is also believed to be objected to, sets forth that said threaded fastener and the inner end of said bolt are both buried within said abrasion resistant material and that said bolt has an axial bore so that when said abrasion resistant material wears down and the inner end of said bolt is exposed, a small amount of the slurry being processed in the cyclone will seep out to indicate that a liner replacement operation should be scheduled. Since the art of record does not disclose such a structure it is believed that claim 6 distinguishes over the art of record.

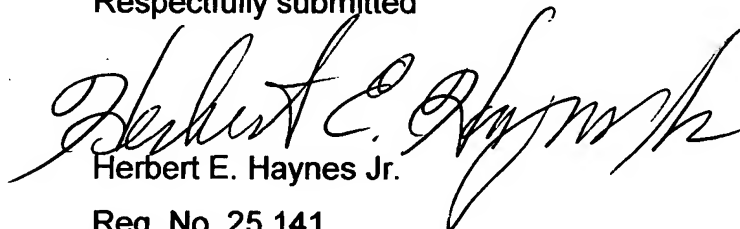
The Examiner indicated that Malina teaches that the abrasion resistant material is an elastomer and that cyclone housing is the substrate which is of metal.

Claim 7 sets forth that said abrasion resistant material is an elastomer and claim 8 set forth that said substrate is metal. Claims 7 and 8 are dependent from currently amended claims 1 and 3 and are thereby construed to include all the limitations of claims 1 and 3. and are believed to distinguish over the art of record for the same reasons that claims 1 and 3 are believed to distinguish over the art of record.

Claim 9 is currently amended to bring the language thereof into conformity with the language of currently amended claims 1 and 2 from which it depends. The Examiner indicated that claim 9 was objected to and would be allowed if rewritten to include the limitations of the base and intervening claims. As discussed above, the Applicant believes that base claim 1 and intervening claim 2 as currently amended, distinguish over the art of record and that claim 9 distinguishes over the art of record by virtue of its dependency.

In view of the above, the Applicant believes that the claims as now presented distinguish over the art of record and that the application is in condition for allowance and such allowance is respectfully requested.

Respectfully submitted

A handwritten signature in cursive script, appearing to read "Herbert E. Haynes Jr.", written in dark ink.

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